

Surplus Wheat Production Brings Emphasis on Quality

Hsin-Hui Hsu, Bryan Lohmar, and Fred Gale

Highlights: China's wheat imports have been minimal in recent years, following huge harvests in the 1990s that were the culmination of policies aimed at raising wheat production. Wheat production has fallen due to lower prices and the government's recent emphasis on wheat quality rather than quantity. Demand for high-quality wheat is rising as consumers switch from traditional noodles to breads and other bakery products. Future wheat imports will be moderate as China's wealthier consumers demand quality over quantity.

China's wheat production fell 12.5 percent in 2000/01 to less than 100 million tons, as planted area declined in response to falling prices and reduced government support (table E-1). The National Bureau of Statistics' crop acreage survey indicated that wheat sown area fell again in 2001/02 by 4.9 percent. Current U.S. Department of Agriculture (USDA) estimates show that wheat production will be 94 million tons in 2001/02. Imports are expected to be modest in 2001/02, at a projected 1 million tons, marking the fifth consecutive year of wheat imports under 2 million tons.

Historically, China has been a heavy importer of wheat; annual imports exceeded 13 million tons in the early 1980s when the country implemented open-door policies. Policymakers sought to reduce dependence on wheat imports by raising procurement prices during

the 1980s and 1990s. Wheat procurement prices peaked in 1996 at more than five times the level of the late 1970s (fig. E-1).

Introduced in 1995, the "Governor's Grain Bag" (*mi dai ze*) policy put further pressure on provincial governments, especially those of grain-importing provinces, to achieve local self-sufficiency in grain. In response, local officials raised grain procurement prices to increase production of grains. This policy culminated in a huge wheat harvest of 123.3 million tons in 1997/98, more than twice the 55.2 million tons produced in 1980/81. As prices fell, grain bureaus were unable to sell wheat procured at higher prices, and grain inventories became a financial burden.

With bulging grain inventories, the government has cut back imports. China's wheat imports fell from a historical high of 15.8 million tons in 1991 to 1.2 million tons or less since 1997/98. Production and consumption patterns in China suggest that wheat imports will not approach the high levels seen in the early 1990s. In the near term, barring major droughts and subsequent production shortfalls, China is likely to hold down imports to continue reducing stocks in preparation for its accession to the World Trade Organization (WTO). However, China's severe drought in 2001 may change its wheat outlook by forcing the country to cut production faster than anticipated. USDA's long-term forecast (a scenario that does not include WTO accession, the timing of which was still not finalized when this report

Table E-1—China's wheat production, trade, and stocks, 1997-2002

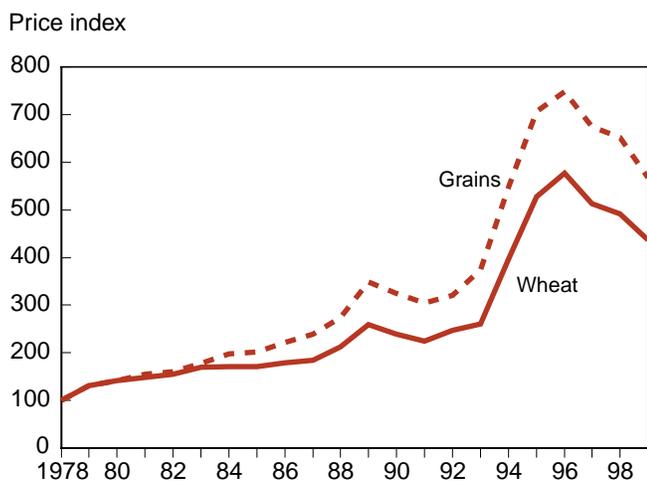
Item	1997/98	1998/99	1999/00	2000/01	2001/02
	<i>Million tons</i>				
Production	123.29	109.73	113.88	99.64	94.00
Imports	1.92	0.83	1.01	0.30	1.00
Exports	1.16	0.54	0.54	0.62	0.50
Stocks	71.12	66.44	65.16	50.48	31.98

Note: Crop year is July through June.

Source: U.S. Department of Agriculture, *World Agricultural Supply and Demand Estimates*, October 12, 2001.

Figure E-1

Government procurement price indices for wheat and major grain crops, 1978-99



Note: 1978=100.

Source: *China Statistical Yearbook*, 2000, p. 303.

was written) is for China's wheat imports to rebound to 2.8 million tons by 2002/03 and then rise to 3.9 million tons by 2010. China's WTO accession could boost import numbers, but the overall demand for wheat would still grow at only a moderate rate.

Demand Growth Will Be Modest

China's wheat demand will grow at a modest pace as population growth slows and consumers diversify their diets. China currently accounts for about one-fifth of the world population, but its growth rate will slow to zero by 2035. China is expected to account for only 12 percent of world population growth between 2000 and 2020 and 5 percent of growth between 2020 and 2040. Thus, based purely on population projections, China may not be a major source of wheat demand growth in the future.

Per capita wheat consumption in China may not grow either. In fact, recent consumption trends in China and the experiences of middle-income Asian countries suggest that per capita wheat consumption may actually decline by a substantial amount as incomes rise, countering the effects of population growth. China boosted per capita wheat consumption in the early years following reforms in the 1970s and 1980s. Per capita consumption of wheat and rice by rural households jumped 85 percent from 1977 to 1984, while consumption of coarse grains dropped. China's consumers now seem to have reached a point where grain consumption will not benefit from further

increases in income. From 1977 to 1989, consumption of fine grains paralleled the increase in rural income, but the subsequent rise in rural incomes from 1989 to 1996 saw no increase at all in fine grain consumption (fig. E-2).

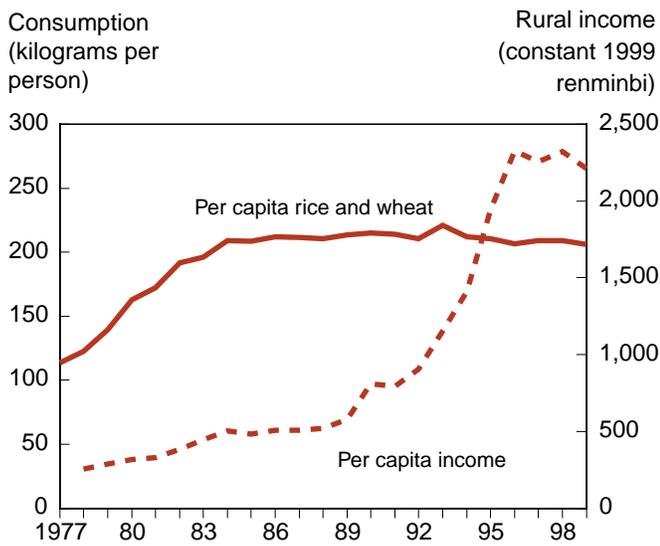
Urbanization and transition from subsistence agriculture to a market-based rural economy may also be reducing per capita food grain consumption in China. Currently, most grain is consumed by the rural households who grow it. Over 60 percent of China's population live in rural areas, and rural per capita grain consumption is nearly three times the level of urban per capita consumption (fig. E-3). In 2000, per capita grain consumption was 249 kg for rural households and just 82 kg for urban households.¹ Statistical publications do not report nationwide per capita consumption of wheat alone, but the rural-urban difference in wheat consumption is likely similar to that of grain.

As China's urbanization rate increases, rural consumers will consume less grain as they adopt urban lifestyles and diversify their diets. Until recent years, rural households had little access to food markets, little cash to purchase food, and no refrigerated storage for perishable foods. They relied on wheat and other grains for a large part of their diets because they could grow grain themselves and store it for long periods without spoilage. As China's farmers move from subsistence agriculture into the commercial economy, they reduce their grain consumption. Rural consumers no longer need to grow their own food, since they have access to markets where a variety of food items can be purchased. Access to refrigeration for storing perishable items is also more common. Thus, the importance of wheat and other food grains in the Chinese diet will decline as urbanization shrinks the number of rural farm households. China's urban population share is likely to rise from its current 36 percent to 50 percent within two decades. The stark difference between rural and urban grain consumption levels suggests that the rising urbanization rate will cut national per capita consumption.

¹ Others report less rural-urban difference in food grain consumption. Huang, Rozelle, and Rosegrant (1999) reported urban per capita grain consumption of 172 kg in 1994, well above the 102 kg reported for the same year in *China Statistical Yearbook*. The discrepancy may come from food consumed outside of the home by urban residents that is not captured in the official statistics. The problem of not including grain consumed outside of the home, or converting processed foods into grain equivalents, is pervasive in the data available to study grain consumption in China. The problem will worsen as incomes grow, increasing demand for food services outside the home and processed foods.

Figure E-2

Rural per capita fine grain consumption and income, 1977-99



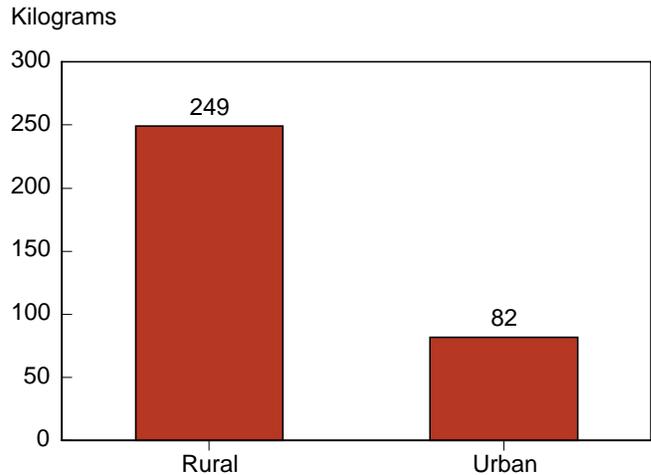
Source: *China Rural Statistical Yearbook*, 2000.

Rural consumers who remain on farms are also reducing their wheat consumption as the rural economy modernizes. Increasingly, farms are growing commodities that can be sold for cash, such as cotton, oilseeds, fruits, vegetables, fish, and livestock products. At the same time, food markets are becoming more common in rural areas, making a wider variety of foods available to farm households, who now have the cash to purchase those foods. Refrigerators, nonlocal foods, and restaurants are also becoming more common in the more prosperous rural areas. Statistical publications do not report rural wheat consumption on a nationwide basis, but anecdotal reports suggest that wheat consumption is falling. Statistical yearbooks for the central province of Anhui report a 10-kg (over 10 percent) decrease in rural per capita wheat consumption during the 1990s.

Increasing use of wheat in processed foods and meals away from home will partly offset declining at-home consumption of wheat flour. China's per capita grain consumption statistics do not include grain consumed in meals eaten away from home. In 2000, 14.7 percent of urban food expenditures went for meals away from home. In rural areas, the average expenditures for away-from-home meals were 4-5 percent. Chinese consumers increasingly patronize restaurants and food stalls that serve noodles, dumplings, breads, and Western fast foods, including hamburger buns and biscuits, all of which use wheat flour. Many processed

Figure E-3

Per capita grain consumption, rural and urban China, 2000



Note: Estimates based on household surveys that do not include consumption away from home or consumption of manufactured food products.

Source: *China Statistical Abstract*, 2001.

foods that use wheat flour are also excluded from per capita wheat consumption statistics. Instant noodles, cakes, and cookies and other manufactured foods also are emerging as important uses of wheat. Many of these products use more refined flour, which requires a larger quantity of wheat to produce a given amount of flour. Rising consumption of restaurant meals and processed foods may do much to offset declining at-home consumption of wheat, but the failure of China's statistics to capture this segment of consumption makes it difficult to monitor how much wheat is going into these foods.

Per capita wheat consumption will likely decline most sharply in northern China, where wheat is the traditional staple food and is used to make noodles, steamed bread, and dumplings. In southern China, from the Yangtze River basin southward (where rice is the traditional staple), per capita wheat consumption may increase as wheat-based food products from northern China and overseas become more popular. In the wealthy southern province of Guangdong, rural per capita consumption of rice fell by 14 kg between 1990 and 1998, reflecting the effect of urbanization and marketization. Over the same period, per capita consumption of grains other than rice (probably wheat) in rural Guangdong doubled from 12 kg to 24 kg. The Guangdong data suggest that southern rural

households are increasing their consumption of wheat products. However, since the increase begins from a low base, it may not be enough to offset the declines in northern China.

Greater Attention to Quality in Wheat Production

Traditional foods—noodles, steamed bread, and dumplings—still account for most wheat use in northern and northeastern China, but growing demand for breads, cakes, and other processed foods is increasing the demand for special types of wheat suited for these products. Bread makers tend to demand high-protein and high-gluten wheat, while makers of cakes and crackers tend to demand low-protein wheat. Most of China’s wheat falls between these two extremes. Processors commonly complain that the wheat they receive is not homogeneous or of a specific type or quality. Most mills in southern China complain that insufficient imports of quality wheat are hurting the domestic bakery business.

Over the past several decades, China’s wheat policy focused on quantity rather than quality. Now finding itself burdened with surplus low-quality wheat, the government is making a new push to improve domestic grain quality.

One notable step the government has taken is its reduction or elimination of procurement prices in

selected regions where wheat tends to be low in quality. In 1999, the State Council announced that procurement prices would be eliminated for year 2000 spring wheat grown in China’s northeastern provinces, including Heilongjiang, Jilin, Liaoning, eastern Inner Mongolia, northern Hebei, and Shanxi areas. In 2001, some spring wheat area in northeastern China was switched to soybeans or alternative cash crops. Procurement prices also were terminated for all wheat grown south of the Yangtze River.

The government also introduced a new set of quality standards for wheat on April 1, 2000 (table E-2). Wheat grades were established with specific end uses in mind. “Quality” wheat includes both high-gluten varieties that are good for Western-style bread and bakery products and low-gluten/low-protein varieties for cookies, cake mixes, and crackers. High-gluten wheat is further classified into two grades based on gluten and protein content. “Regular” wheat is classified into five grades on the basis of weight, percentage of imperfect grains, and foreign materials. All grades must also meet minimum standards for foreign materials, moisture, color, and smell. Since quality wheat includes both high- and low-gluten wheat, the term “special-use” may be more appropriate. Some farmers have misinterpreted quality to mean cleaner, heavier, or organically grown wheat.

Although authorized mills can buy directly from individual farmers, mills typically do not buy small

Table E-2—Wheat quality standards and different end-uses in China

Quality/Grade	Crude protein	Minimum	Maximum	Type of wheat	Uses
		container weight	imperfect grains		
	<i>Percent dry</i>	<i>Grams per liter</i>	<i>Percent</i>		
Quality high-gluten wheat:					
Grade 1 (wet gluten at least 35)	15	770	6	Durum	Pasta, spaghetti
Grade 2 (wet gluten at least 32)	14	770	6	Hard	Bread, buns
Quality low-gluten wheat (wet at most 22)	11.5	750	6	Soft	Cake mix, biscuits
Regular wheat (protein level)	na	710-790	6-10	Mixed	Wonton, dumplings (13) Cantonese yellow noodles (12-13) Dry white noodles (10.5-12.5) Steamed bread (10.5-12.5) Instant noodles (10.5-12)

Note: na = not applicable. Minimum standards for moisture content (no more than 12.5 percent), foreign materials (no more than 2 percent), and normal color and smell were also specified for all grades. Falling rate, dough stabilization time, and baking value were specified for quality wheat grades.

Sources: China State Bureau of Technical Supervision, “Quality Standard of Staple Grain,” Beijing, November 1999; David Shelton, Wheat Marketing Center, Inc., Washington, DC.; Australian Wheat Board.

amounts of quality wheat from individual farm households, because certification, shipment, and storage is cumbersome. In practice, state-owned grain procurement stations and mills sign contracts with a group of producers at the village level to acquire large amounts of high-quality wheat. Premium-grade wheat, however, often lacks homogeneity—poor-quality wheat is frequently found mixed in with high-quality batches. Mills are not satisfied with current premium varieties and often blend domestic wheat with imported wheat to improve quality and make better flour.

China has developed several high-quality, high-gluten wheat varieties with a minimum of 14 percent crude protein (whole kernel, dry basis), but low-gluten varieties are few and it is unclear whether farmers have an incentive to adopt these new varieties. State-owned grain stations pay a 10-percent premium for high-quality wheat, but this premium does not appear to make up for the lower yields of the high-protein and high-gluten varieties. Some local procurement officials, however, used the new standards to reject or pay discounted prices well below protection prices for many farmers' wheat deliveries. Some observers suggested that local grain bureaus were using wheat standards as an excuse to reject grain in order to prevent their burdensome wheat stocks from growing even more. The potential rejection of a farmer's wheat may induce farmers to plant high-quality wheat without adequate price incentives if alternatives to wheat are unavailable to the farmer.

Statistics indicate that high-quality wheat acreage is expanding. A National Bureau of Statistics survey of 2000/01 winter wheat sown area showed a 7.2-percent increase in "quality winter wheat" area, even though overall winter wheat area decreased by 2.3 percent. The National Grain and Oils Information Center (NGOIC) estimated that total quality wheat area would reach 3.9 million hectares in 2001/02.² NGOIC estimates that quality wheat area has expanded from 4.5 percent of total wheat area in 1998 to 16 percent in 2001. NGOIC estimates that quality wheat production was 16.5 million tons in 2001/02, 17.5 percent of total wheat production. The Ministry of Agriculture has published a target for premium grade quality wheat of 20 million tons by 2005 (Yang).

While statistics show rising high-quality wheat acreage in China, the increase is apparently not enough to keep up with demand. Millers claim that there is still demand for wheat quality types that is not being met through domestic production. Millers express considerable interest in purchasing imported quality wheat, which has been scarce due to low import volumes in recent years. Wheat exporters in the United States and other countries should see rising sales of high- and low-protein wheat to China, especially after the country's WTO accession. It remains to be seen whether China's domestic wheat producers will eventually achieve a quality mix that better matches domestic demand.

Investment Needed to Expand Production

China's wheat production has grown significantly over the past 40 years. Before implementing agricultural reforms in the late 1970s, China expanded wheat production primarily by devoting more inputs to wheat production—more acreage, irrigation, and labor. After rural reforms began in 1978, grain production rose rapidly as institutional reforms made inputs more productive. From 1978 to 1985, wheat production increased at an average annual rate of 6.9 percent, faster than production increases in rice, corn, or soybeans. From 1986 to 1995, however, annual wheat production growth slowed to 1.6 percent. Production surged again during 1995-97—mainly due to increases in land and other inputs in response to the Governor's Grain Bag policy—but productivity gains were still small (Colby, Diao, and Somwaru).

The shift in input use spurred by the Governor's Grain Bag policy during the mid-1990s has reversed in recent years as China adjusted to the resulting massive grain surpluses. Any growth in future wheat production will have to come from productivity gains because land and labor inputs are likely to move out of wheat production. Since wheat returns per unit of land are low, much wheat acreage has been shifted to more profitable crops or returned to more environmentally friendly grasslands or forests. Labor is also moving out of agriculture as the large agricultural labor force shifts to nonagricultural employment where earnings are higher.

Water Shortages Threaten Wheat Production

Lack of irrigation water is one of the chief threats to China's wheat production (Lohmar et al.). Problems

² China National Grain and Oils Information Center, *China Grain Market Monthly Report*, No. 18, July 2001.

are particularly acute on the north China plain, which includes the important wheat-producing provinces of Henan, Shandong and Hebei, a region that has experienced drought in the last 2 years and rapidly falling groundwater tables. Wheat is especially vulnerable to water shortages because its main growing period is in the dry spring season.

Even in years of normal rainfall, northern China experiences water shortages. Rising industrial, household, and agricultural demand for water have outstripped water resources and infrastructure for delivering irrigation water. Water management institutions are geared toward exploiting China's water resources for agricultural and industrial development rather than managing them in a sustainable way. Many rivers, streams, and irrigation networks in the north China plain are now dry for much of the year. As surface water deliveries have grown less reliable, irrigation has increasingly relied on groundwater. Over 50 percent of irrigation water in Hebei and over 40 percent in Shandong is from groundwater.

In 1998, China responded to the impending water resource crisis by revamping the 1988 Water Law to emphasize water-saving practices, unify water management institutions, and invest in more efficient water-delivery infrastructure (Lohmar et al.). It is too early to measure the effectiveness of the new law, but if it fails to avert a water crisis, wheat production may be seriously curtailed. Wheat is heavily reliant on irrigation. The high-yielding varieties developed by breeders are often particularly dependent on irrigation, so their adoption will depend on reliable water deliveries. Wheat also provides farmers with lower returns than many other crops. Thus, if water becomes more scarce or costly, farmers will likely use it to irrigate fruits, vegetables, and other crops that bring higher returns.

Research and Extension Investment Critical

Research and development have played a key role in raising productivity of wheat inputs, and that role must continue in the future. In the 1960s, China imported dwarf rust-resistant and semi-dwarf wheat varieties from the international agricultural research system and from these seeds developed other Chinese varieties. Today, nearly all of China's wheat acreage is sown to either high-yielding or high-quality wheat varieties.

Investment in domestic seed research institutions is necessary to achieve further growth in wheat produc-

tion, but such investment has proven difficult in the past. China's ninth Five-Year Plan (1996-2000) set a goal of increasing agricultural research expenditures to 29 percent of total government research expenditures, but agriculture's share of government research remained at only 13-14 percent throughout the 1990s. Measures of agricultural research intensity declined in the 1990s and are below international standards established by the United Nations Food and Agriculture Organization (Nyberg and Rozelle). Increasing public investment in research to levels that match those of other agricultural nations will be a good start, but this alone will not be sufficient to raise wheat productivity.

Public investment in new wheat varieties could be supplemented by investments by nongovernmental organizations (NGO) and the private sector. However, international NGOs cannot make up entirely for lagging public investment because they do not focus on developing seeds for specific microenvironments. International NGOs develop plants with favorable traits that local public research institutes must adapt to local conditions.

Multinational seed companies have made substantial contributions to productivity of rice and other crops in many developing countries, but the role of such companies has been limited in China. Currently, only two multinational seed companies sell small amounts of field crop seed in China and only a few foreign companies conduct in-country research (Nyberg and Rozelle). Much of that research is for promotional purposes, rather than development of new varieties.

Poor enforcement of intellectual property rights is the primary impediment to seed development by foreign enterprises in China. China has extended property right protection to plant breeders only since 1997. Even though the legal framework is in place, enforcement remains insufficient. Barriers to entry for foreign seed companies, including government-sanctioned monopolies in some agricultural input industries and prohibitions on majority foreign ownership in joint ventures, discourage seed companies from entering China's potentially large seed market.

China's agricultural extension system must be upgraded to ensure that new technologies are actually used by farmers. In a recent survey by the Center for Chinese Agricultural Policy, more than 70 percent of village extension personnel reported that the frequency, scope, and coverage of their services fell in the 1990s and that

large numbers of village extension offices had closed over the decade. Fiscal constraints have induced local authorities to allow, and sometimes encourage, extension agents to supplement their incomes through engaging in work-related businesses, primarily selling agricultural inputs, such as pesticides, seeds, and fertilizer. While this practice has kept many village extension offices open, it can lead to conflicts of interest, where extension agents recommending seeds or other inputs are motivated by personal gain rather than the farmers' interests.

WTO Accession Will Boost Wheat Imports

China's wheat sector could be significantly affected by the country's accession to the WTO (see "China's WTO Accession Would Boost U.S. Ag. Exports and Farm Income" *Agricultural Outlook*, March 2000). China will implement a tariff-rate quota (TRQ) for wheat that will begin at 8.4 million tons in 2002 and rise to 9.6 million tons by 2004. If the wheat TRQs are filled, imports would rise to levels comparable to those of the early 1990s, substantially higher than the 2-4 million ton imports projected without WTO accession. China agreed to expand the role of nonstate trading enterprises in international trade after WTO accession, but state-trading enterprises will still control 90 percent of the wheat TRQ. China has also committed to a more transparent decision process for allocation of import quotas and science-based phytosanitary standards that are expected to reduce nontariff barriers to wheat.

Wheat has been viewed as a strategic commodity central to China's food security policy so the government is reluctant to relinquish control of the wheat economy to the free market. China's ability to maintain its grain self-sufficiency policies will be the "wild card" in its long-term wheat outlook. Some economists within China have called for loosening the grain self-sufficiency policies in favor of allowing markets to guide agriculture into production that makes more efficient use of China's resource endowment. China's government has indicated that modest grain imports are acceptable, but China's leadership may become uncomfortable if imports rise too high. In the past, China has used marketing and production policies to maintain self-sufficiency in grain, but it is not clear what policy tools will be permissible under WTO rules.

Grain Bureaus Reduce Surpluses

The Chinese government is trying to reduce its grain reserves to make room for imports expected after WTO accession. China will not be required to fill its TRQ for wheat after joining the WTO, but imports are expected to rise when the TRQs are in place, although not necessarily to the full 8.4 million tons set for 2002. Reportedly, the country's grain bureau would like to reduce wheat stocks to a minimal level to have more flexibility if imports do rise. During 2000 and 2001, grain bureaus held a series of auctions to sell off old wheat, much of it imported in 1996 or earlier. Since bidding prices were well below original purchase prices, grain bureaus experienced losses from the transactions that may be compensated by government subsidies. For the months of February and March 2001, the government announced a sale of 720,000 tons. The auctions could continue for the rest of the marketing year before China's accession to WTO.

Among the reforms China is implementing in anticipation of joining the WTO is a streamlining of the grain procurement and distribution system. In April 2000, the once-powerful State Administration of Grain Reserve, which controlled food rationing until its phase-out in the early 1990s, was reorganized into two separate entities to separate policy functions from commercial grain operations. The State Grain Bureau is a policy-oriented decision-making agency that will manage strategic grain reserves and implement other policy actions to address China's food security concerns. The China Grain Reserve Management Corporation will conduct grain trade business with the intent that it will eventually operate like a commercial trading company.

Lengthy Decision Process for Imports May Grow Longer After WTO Entry

Bureaucratic inertia slows the decision-making process for approving and executing wheat import sales in China. The process is lengthy, involving much paperwork and several layers of bureaucracy. Wheat has been the most tightly controlled agricultural trade item in China because of its strategic importance to food security. Except for small purchases, the State Council makes import decisions, and subordinating agencies operate under the scrutiny of supervising agencies.

This system may explain why China's wheat import purchases are characterized by a long lag time and have been sometimes unexpected, such as occurred in the mid-1990s. The institutional wheat import process can be depicted in the following four steps.

1. The State Council makes an import decision based on information received from various channels.
2. Based on the State Council's decision, the State Planning and Development Commission issues specific volume, varieties, and quality characteristics of foreign wheat to be purchased to other trade agencies, including the State Commission of Economics and Trade.
3. The Ministry of Foreign Trade authorizes the state trading company, COFCO, to source materials, negotiate prices, sign contracts, issue a letter of credit, and deliver foreign wheat to specific ports in China.
4. Upon the arrival of foreign wheat, COFCO turns over the ownership and grain-handling rights to the domestic grain bureau system, which then takes over receiving, warehousing, distributing, and managing of the imported wheat.

COFCO is a state-run enterprise that serves as a purchasing agent for domestic grain bureaus. However, when ownership of wheat imports is transferred from COFCO to the grain bureau system, COFCO must be paid by the state at fixed domestic prices. For example, when the world price is lower than the domestic market price, COFCO cannot sell wheat it has imported at a price that would undercut prevailing prices on the domestic market. The state holds ultimate responsibility for the final adjustment of financial losses or gains to both COFCO and the grain bureaus. The state subsidizes losses and takes in financial gains. If the grain bureau system finds that quality and quantity of the imported wheat differ from specified contract details, it can provide evidence to COFCO and ask for compensation.

Once China joins the WTO, the bureaucratic policy process could be exacerbated. China has agreed to implement TRQs for wheat, 10 percent of which will be allocated to private trading entities. The State Planning and Development Commission recommends

quota amounts, which are then approved by the State Council. Once the level has been set, the Ministry of Foreign Trade and Economic Cooperation will grant licenses to import specific quantities to specific companies, including COFCO and private business entities. The added layers of government involvement could imply an even longer lag time for purchases, more internal conflicts, unnecessary complications, and missed market opportunities.

The United States faces fierce competition from Australia and Canada for the China wheat import market. In the 1990s, Canada had the largest share of China's market; the U.S. market share averaged about 30 percent.

Agreement on TCK Phytosanitary Standard: Implementation Ongoing

Beginning in 1973, China banned imports of wheat and barley shipped from ports in the U.S. Pacific Northwest. Chinese authorities required that shipments be completely free of dwarf bunt smut, a minor plant disease caused by the pathogen *Tilletia Controversa Kuhn* (TCK), commonly referred to as TCK smut.

As part of the U.S.-China Agricultural Cooperation Agreement signed in 1999, China agreed to lift the longstanding phytosanitary ban on U.S. wheat from the Pacific Northwest. Previously, China had refused to accept wheat shipments with any trace of TCK spores. In the 1999 agreement, China agreed that U.S. wheat from any State or U.S. port would be accepted at any Chinese port, as long as the shipment was found to be below a tolerance level of 30,000 TCK spores per 50-gram sample.

Since the 1999 agreement was implemented in 2000, more than a dozen wheat shipments have been tested by the Federal Grain Inspection Service for export to China, and all were found to be within the TCK smut tolerance level. The TCK issue has not disappeared, however. Chinese customs officials continued to quarantine or demand treatment of wheat and barley shipments. In response to concerns raised by U.S. grain industry interests, Chinese officials reiterated China's determination to abide by the agreement.

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